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The Role of Private Off Dock Terminals on Port Efficiency (A Study of Sifax Off Dock Nig, Ltd.)

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ABSTRACT

This study examines the role of private off dock terminal in enhancing port efficiency in Nigeria; the purpose of the study is to examine the extent to which private off-dock terminals have contributed to the efficiency of ports in Nigeria with respect to cargo clearance and forwarding, questionnaires were administered and review has been carried out to obtain primary data collection. A total of 100 questionnaires were administered to respondents and related literatures have been used for secondary data. A survey design method was adopted for the study. The statistical tools employed in analyzing the analysis are simple percentage; tables and hypothesis were tested using chi-square. Based on the findings, private off dock terminal has not really impacted on Lagos port over the last five years based on the cargo volume handled by them. It also reveals that private off dock terminal is facing problem in its implementation in Nigeria such as the availability of railway connectivity and inadequate finance and also the inconsistencies of government policies in line with off dock operations. The findings also reveals that the cost of clearing cargo at terminal is high compared to main ports. To this end the study recommended that reductions of chargers on cargo clearance and terminal handling of cargoes should be looked into by private off dock owners, government should ensure railway connectivity form port to off dock terminals, policies should be enacted, which will ensure efficient operations of private off dock terminal in Nigeria.

Keywords-- Inland Container Depots, Cargo Volume, Cargo Pricing, Port Efficiency

I. INTRODUCTION

Private off-dock terminals also known as Inland Customs Clearance Depots or Bonded Terminals may be generally seen as facilities located inland or remote from port(s) which offer services for the handling, temporal storage and customs clearance of containers and general cargo as well as empties (Maduka, 2004). Containers are transferred between land vehicles, typically between train and truck or truck and truck. Private off-dock terminals tend to be located in or near major cities. Most of the terminals are well connected by road and rail which facilitates the transfer of containers and general cargoes from the terminals to the sea ports and vice versa.

According to Branch (1998), private off-dock terminals have been the best way to decongest ports in many parts of the world as they serve as storage facilities for both laden and empty containers for relatively short or long periods. Their primary purpose is to allow the benefits of containerization to be realized on the inland transport leg of international cargo movements. Economic activities have increased as a result of the introduction of these terminals and the time spent for loading containers have decreased considerably leading to time and optimum efficiency.

The primary functions of private off-dock terminals include receipt and dispatch of cargo, stuffing and stripping of containers and general cargoes, customs clearance, consolidation and disaggregation of less than container load (LCL) cargo and temporal storage of cargo and containers. Some of the advantages derived from these terminals include better customs checking clearance, better cargo management, cargo storage in sheds and open areas, reefer point's availability for reefer containers in most locations and quicker processing of documents. Computerization, human resource developments, and better cargo handling equipment have helped improved off dock terminals container operations in developing countries.

The strategic importance of private off-dock terminals to ports efficiency and to shipping and trade in general makes it desirable to sustain their activities at an optimum level. In countries with congested city ports like that of Lagos Nigeria, more private off-dock terminals than presently available are perhaps needed. However, various challenges threaten the existence of these terminals. Tackling such challenges for better performance of their complementary role to the ports provide the impetus for this study.

1.2 Statement of the Problem

As earlier inferred, government granted licenses to a number of private off-dock terminal operators as a means to decongest the main ports especially in the Lagos area. These off-dock terminals are also bonded, from which they derive their appellation "bonded terminals". This means they have the full presence of customs and ports authorities to aid shippers and freight forwarders in cargo clearing and forwarding, just as are obtainable in the main ports.

Judging by the number of years that some of the private off-dock terminals have been in existence, one would presume that their users – freight forwarders and shippers – would have come to acknowledge their usefulness as full complements of our port system. While the operators of the off-dock terminals believe that they have aided port decongestion, albeit with challenges, not so the users of the facilities who complain that private off-dock terminals are inefficient and costly for handling their cargo. These extreme positions being canvassed by both the operators and the users of private off-dock terminals pose a difficulty to observers to be able to objectively assess the true roles of private off-dock terminals as agents of ports decongestion and efficiency.

To put these contentious claims in proper perspective therefore, this study seeks to examine the role of off dock private terminals and their impact on cargo clearance vis-à-vis the extent to which shippers and freight forwarders make use of the terminals. Sifax Off-Dock Terminal Nigeria Ltd is to be used as the case study.

1.3 Purpose of the Study

The overall purpose of the study is to examine the extent to which private off-dock terminals have contributed to the efficiency of ports in Nigeria with respect to cargo clearance and forwarding.

In addressing the above overall purpose, the study specifically seeks to:

i. To examine the relationship of cargo volume handled by private off-dock terminals over last five years.
ii. To evaluate the causes of port inefficiency towards cargo handling of freight forwarders.
iii. Examine the level and extent of assistance received by off dock terminals from government and other authorities to enhanced port efficiency.
iv. Determine how efficient (in terms of cost savings and time) it is for freight forwarders and shippers to handle cargo through the off-dock private terminals compared to the main ports.

1.4 Research Hypothesis

i. **H_0** There is no significant relationship of cargo volume handled by private off dock terminal over the last five years.
ii. **H_0**The causes of port inefficiency have no significance towards cargo handling freight forwarders.
iii. **H_0** The level and extent of assistance received by off dock terminals from government and other authorities has no impact on port efficiency.
iv. **H_0** There is no significant difference in cost-effectiveness and turnaround time of handling cargo at private off- dock terminals and at the main port.

II. THEORETICAL FRAMEWORKS

2.1 Queuing Theory

Adedayo et al. (2006) stressed that many situation in life requires one to line up or queue before being attended to. These lines formed are referred to as waiting lines or queues. According to them queue occurs when the capacity of service provided fall short of the demand for the service. Sanish (2007) in his article on application of queuing to the traffic at New Mangalore Port refers to queuing theory as an analytical technique accepted as valuable tool for solving congestion problems. According to him the primary inputs to the models are the arrival and service patterns. These patterns are generally described by suitable random distribution. He observed that the arrival rate of ships follows exponential distribution while the service time follows Erlang or Poisson distribution. He observed that queuing theory can be used to predict some important parameters like average waiting time of ships, average queuing length, average number of ships in the port and average berth utilization factor closer to the actual values.

The system of operation at Tin Can Island Port can be model as a queuing process. Ships come to the port as customers to get service and the facilities at the port render services to ships as servers. Here, services refer to handling of cargoes and use of facilities at Tin Can Island Port for berthing of ships. A large portion of the solution of waiting line problem encountered at the ports involves making decisions in one or a combination of the following.

(i) Number of berths that are needed to serve the arriving ships.

(ii) Delay of loading/unloading of cargo/container

(iii) Future expansion of the port facilities considering the future expected port congestion at ports; an attempt is made in this study to find solution to the incidence of port congestion in Nigeria with

particular reference to Tin Can Island Port. The problem can be modeled as a multi-server queue problem with no system limit, arrival can be from a theoretically infinite source and the service is on first-come-first-serve priority rule.

III. THE CONCEPTUALIZATION

3.1 Concept of Congestion Pricing

Congestion pricing is a system of surcharging users of public goods that are subject to congestion through excess demand such as higher peak charges for use of bus services, electricity, metros, railways, telephones and road pricing to reduce traffic congestion; airlines and shipping companies may be charged higher fees for slots at airports and through canals at busy times. This pricing strategy regulates demand, making it possible to manage congestion without increasing supply. Market theory, which encompasses the congestion pricing concept, postulates that users will be forced to pay for the negative they create, making them conscious of the costs they impose upon each other when consuming during the peak demand, and more aware of their impact on the environment.

Implementation of congestion pricing has reduced congestion in urban areas, but has also sparked criticism and public discontent. Critics maintain that congestion pricing is not equitable, places an economic burden on neighboring communities, has a negative effect on retail businesses and on economic activity in general, and represents another tax levy.

A survey of economic literature on the subject, however, finds that most economists agree that some form of road pricing to reduce congestion is economically viable; although there is disagreement on what form road pricing should take. Economists disagree over how to set tolls, how to cover common costs, what to do with any excess revenues, whether and how "losers" from tolling previously free roads should be compensated, and whether to privatize highways. Also, concerns regarding fossil fuel supply and urban transport high emissions of greenhouse gases in the context of climate change have renewed interest in congestion pricing, as it is considered one of the demand-side mechanisms that may reduce oil consumption.

Congestion pricing is a concept from market economics regarding the use of pricing mechanisms to charge the users of public goods for the negative externalities generated by the peak demand in excess of available supply. Its economic rationale is that, at a price of zero, demand exceeds supply, causing a shortage, and that the shortage should be corrected by charging the equilibrium price rather than shifting it down by increasing the supply. Usually this means increasing prices during certain periods of time or at the places where congestion occurs; or introducing a new usage tax or charge when peak demand exceeds available supply in the case of a tax-funded public good provided free at the point of usage.

According to the economic theory behind congestion pricing, the objective of this policy is the use of the price mechanism to make users more aware of the costs that they impose upon one another when consuming during the peak demand, and that they should pay for the additional congestion they create, thus encouraging the redistribution of the demand in space or in time, or shifting it to the consumption of a substitute public good; for example, switching from private transport to public transport.

This pricing mechanism has been used in several public utilities and public services for setting higher prices during congested periods, as a means to better manage the demand for the service, and whether to avoid expensive new investments just to satisfy peak demand, or because it is not economically or financially feasible to provide additional capacity to the service. Congestion pricing has been widely used by telephone and electric utilities, metros, railways and autobus services, and has been proposed for charging internet access. It also has been extensively studied and advocated by mainstream transport economists for ports, waterways, airports and road pricing, though actual implementation is rather limited due to the controversial issues subject to debate regarding this policy, particularly for urban roads, such as undesirable distribution effects, the disposition of the revenues raised, and the social and political acceptability of the congestion charge.

Congestion pricing is one of a number of alternative demand side (as opposed to supply side) strategies offered by economists to address traffic congestion. Congestion is considered a negative externality by economists. An externality occurs when a transaction causes costs or benefits to a third party, often, although not necessarily, from the use of a public good: for example, if manufacturing or transportation cause air pollution imposing costs on others when making use of public air. Congestion pricing is an efficiency pricing strategy that requires the users to pay more for that public good, thus increasing the welfare gain or net benefit for society.

Viewed from the foregoing explanations, charging of demurrage on unclear containers at the ports and at the private off-dock terminals may be interpreted as some form of congestion pricing. The fact that shippers and freight forwarders allegedly pay higher demurrage at private off-dock terminals may be due to the need of the operators to offset storage costs and retain some profit as commercial operators.

3.2 Concept of Inland Container Depot (ICD)

Maduka (2004) observes that the concept of inland container /dry ports over the years was a reflection of government policy inconsistencies and undefined port's management situational conditions. The write up examines the concepts of inland container dry ports (ICDs) as a reflection of government unconcerned, non

regulations and also a result of the complications and problems of the 2001 port congestion in Nigerian port's-maritime industry, due largely to government policy inconsistencies with regard to maritime operations. It is seen that, the historic development of the establishment of ICDs as a panacea to port congestion problem, which had overwhelmed port operations, thereby leading to reduced productivity and underutilization of the port system. It is also seen that, there is a clear-cut socio-economic justification for the establishment of bonded warehouses and ICDs, in terms of increased productivity, cargo throughput and the economic development of the general society and the national economy at large.

According to Ndikom (2004) the development of inland container dry ports (ICDs) in ports located in the six geopolitical zones of the country is part of the current port reform agenda of government. It could be noted that, the collapse of such a port system would mean the collapse of the entire economy. The Nigerian port's system has been in dire need of reforms. The problems and complications of the 2001 congestion saw the ports at an operational standstill, calling for urgent attention with regard to resolving the problems caused by government policy inconsistencies.

According to Sekibo (2005), government in a bid to find a lasting solution to the problems inaugurated a decongestion committee, which was headed by Alhaji Aliko Dangote, with the mandate to resolve the problems. The committee, after a comprehensive appraisal and analysis of the pending problems, made recommendations to government for the establishment of bonded warehouses and inland container dry ports in some selected areas of the six geo- political zones of the country.

It is expected therefore, that these two concepts, if so established, would drastically reduce the hydra-headed problem and complication of port congestion and hence increase port productivity and performance. It is pertinent to note that, a container freight stations (CFS) or inland container dry ports (ICDs) is also referred to as a dry port, as they provide various services for handling containers outside the port.

Maduka (2006) explain the terms ICDs and CFS are often used interchangeably, as there is not much difference in their operational modalities and functioning. Mainly, CFSs are off dock terminals located near servicing ports and which are used as means of port decongestion, as cargo and customs- related activities are moved out of the port area (that is to CFS). CFS largely deal with break bulk cargo originating/ terminating in the immediate hinterland of a port and which may also deal with rail- borne traffic to and from inland locations.

3.3 Developments in Off-Dock Terminals

The ever-increasing volume of import cargo in marine containers has resulted in growing pressure on North American terminal capacity as well as other developing nations that have most of their port systems congested. Existing major ports are facing significant challenges in expanding on-dock capacity due to constraints on land availability in the vicinity of existing terminal and Harbour facilities; environmental issues, and local community concerns over traffic congestion and quality of life impacts. These factors have generated growing interest in the concept of off-dock terminals as a means of boosting capacity, through potential reductions in container dwell time at on-dock terminals and the transfer of non-essential terminal activity to inland locations.

Off-dock terminals are an essential part of the total intermodal system at the point of interface where containers are transferred from port operation quay to inland terminals.

Muller and Gerhardt (1998) stated that, the sophistication and complexity of an off-dock terminal layout is dependent on diverse factors. These include volume, size of vessel, available property, capital available and a host of other factors.

The rise in containerization begins to emerge as advantageous over break bulk shipping of loose cargo. Growth in the freight trucking industry spurred the development of containerization in 1956 and in that year the Port Authority of New York and New Jersey approved development of a container port in New Jersey. In 1958, Matson Navigation deployed the concept on the West Coast and began development of container port facilities. From then on, container terminals have enormously increased the ease and some level of flexibility of movement of goods on land-sea intermodal journeys.

According to Branch (1998), the role and significance of ports in maritime and intermodal trade has changed dramatically in the past decades in the sense that they have attained a higher economic and technical profile. Writing on *Maritime Economic: Management and Marketing*, Branch indicated a number of the circumstances or rationales that constitute the historical drive behind the development of ports including issues such as:

• Political events in North America, Europe and Asia; the rapid development of
East Asia and the enhancement of regional economic co-operation.
• The emergence of larger container vessels, which have affected the pattern of trade routes and rationalization of ports of call. Thus, ports have had to be strategically positioned to attract larger container vessels.
• Fostering of links among governments and international trading blocs give priority to the development of ports
• Emergence of free trade zones, which offer benefits to the entrepreneur.

Furthermore, Branch noted that the strategic location of ports and the extent of its development play a significant role in the ship operator's strategic plan for formulating sailing schedules, which mostly hinder on financial options for ports of call when reviewing sailing schedules in terms of cost and revenue generation, and market opportunities. Moreover, containerization system,

which enhances the distribution of cargoes globally, is efficient and adds value to the shipper/user/consumer.

Being an organic growth industry, the share of containerized cargo trade increased from 35 percent of total global trading in 1990 to 48 percent in 1997, (Branch 1998). In 2000, however, Branch (1998), stated that, the share of container trade was 55 percent and has since continued to grow in volumes and significances. Most ports in the world have therefore taken extreme advantage of the emergence of this system to attract increasing volumes of cargoes for both revenue generation and international recognition. Instrumentally, this has propelled the port of Apapa or Tincan to decongest port quays and operational area to facilitate shipping operations as well as distribution of cargoes inland. A significant inventiveness is the establishment of off-dock terminals.

According to Ndikom (2006) the maritime industry is highly technical, competitive and complex industry, which over the year has been bedevil
These include:

i. Seaport problems culminating in congestion, cargo clearance delays, high demurrage, sharp practices resulting in increased cost of ship business operation.
ii. High rate of government policy inconsistencies, especially on banned imported items, which often lead to port congestion and allied problems.
iii. The fact that Nigeria is a coastal country with a large hinterland and expanse of inland waterways.
iv. Multiplicity of agencies at the ports, leading to tollage extortions and corruption.

3.4 Design and Lay-Out of Off Dock Terminal

Ndikom (2004) said that the design and layout should be the most modern state-of-art equipped with mechanical/electrical facilities of international standards. Key to a good lay-out is the smooth flow of containers, cargo and vehicles through the terminal. The design and lay-out should take into account initial volume of business, estimated volume in 10 years' horizon and the type of facilities exporters would require. The initial lay out should be capable of adaptation to changing circumstances. The design broadly should encompass features like (rail) siding, container yard, gate house and security features, boundary wall (fencing), roads, pavements, office building and public amenities. The track length and number of tracks should be adequate to handle rakes and for stabling trains where relevant.

The perimeter fencing and lighting must meet the standards required by Customs authorities. The gate being the focal point of site security should be properly planned. The administration building is the focal point of production and processing of all documentation relating to handling of cargo and containers and its size will be determined by the needs of potential occupants. Fixed provisions should be made for sanitation facilities and possibly a food service facility.

A good communication system and computerization and EDI connectivity is essential. Following Infrastructure should be available at the off dock terminal.

v. Provision of standard pavement for heavy duty equipment for use in the operational and stacking area of the terminal. In cases where only chassis operation is to be performed, the pavement standard could be limited to that of a highway.
vi. Office building for off dock terminal, Customs office and a separate block for user agencies equipped with basic facilities.
vii. Warehousing facility, separately for exports and imports and long term storage of bonded cargo.
viii. Gate Complex with separate entry and exit.
ix. Adequate parking space for vehicles awaiting entry to the terminal.
x. Boundary wall according to standards specified by Customs.
xi. Internal roads for service and circulating areas.
xii. Electronic weighbridge.

3.5 Operations of Off-Dock Terminals in Nigeria

According to Maduka (2004), the establishment of off dock terminal in the geopolitical zones of the country is, no doubt, a welcome development. Off dock terminals are transit facilities located in the hinterland and equipped with fixed and movable installations for handling and storage of cargo; they have public authority status and are operated under the landlord port management model, such as is practiced at the Tincan Island Port and Apapa Port Complex in Lagos State. However, for off-dock terminal to achieve the desired objectives, government must provide integrated intermodal transport facilities in the country. As mentioned earlier, the Nigerian government is involving the Nigerian Railways Corporation in the project alongside the Nigeria Port Authority (NPA), Nigerian Maritime Administration and Safety Agency (NIMASA), and the Nigerian Shippers Council (NSC).
Without an effective integrated transport system, the project would fail, as rail transport is pivot to off dock terminal operations. The operation involves large and extra-large containers and other equipment being conveyed from ports to off dock terminal areas through rail lines.

However, considering the current condition to Nigerian Railways Corporation, one doubts if it has the capacity to meet up with its obligation towards the smooth takeoff of off-dock terminals across the country. This is where the government should come in, to put infrastructure in place; it should provide rail tracks, rolling stocks, terminals marshaling yards, running sheds/ mechanical workshops, etc. Moreover, the existing rail lines at various ports must be rehabilitated.

Maduka (2004) observes that an effective off dock terminal project needs efficient rolling stocks, wagons, coaches and locomotive with other modern units like piggybacks, double stacking wagons and so on. After

the railways are fully developed and equipped by government, we can then confidently say that off dock terminals have commenced operation and, thus have come to stay.

Besides, the government must ensure that there is good road network linking the off dock terminal with major federal highways. This will make it easier for trucks to take imported/ exported goods to their final destinations, in a seamless manner and safety too.

3.6 Significance of Off-Dock Terminals

The modern conception of sea container terminals development means fulfilling functions - container transshipment and temporary storage of containers. In order to arrange stuffing/ unstuffing of containers and their prolonged storage it was necessary to establish off-dock terminals connected with the sea terminal, railways and roads. The deep-sea terminals are the focal points for the network of facilities that make up the container transportation system in the lower mainland. Off-dock container facilities engage in a variety of activities related to the handling of freight transported in international marine containers, including unloading, consolidation and forwarding of import shipments, and reloading of containers for export. In the last two years, they have taken on a larger role in the storage of empty containers as a means of maintaining the productivity of the deep-sea terminals. These are key activities in maintaining the competitiveness of the other smaller ports as a link in firms' supply chains, and greatly increase the local economic impact of international container traffic.

According to the OT African Lines (2003), shipping formalities can be completed in Off-dock terminals for containerized cargoes instead of at the exit gateway port. Off-dock terminals are therefore a convenient shipping alternative extending port services closer to hinterland customers. These Off-dock terminals are basically aimed at:

i. Enhancing decongestion of container terminals at port by reducing container dwell time through enhanced take-off of import containerized cargo for clearance at the Off-dock terminal. Additionally, the depots also facilitate swift dispatch of export containers thereby increasing container turnaround time creating more space at the container terminals inside ports.
ii. Minimizing road damage and carnage – Off-dock terminals facilitates the diversion of heavy container traffic from the road to rail. This in turn minimizes road damage caused by heavy trucking thus ensuring smoother roads while giving them more life.
iii. Providing safety and security for cargo – thus, cargo transported by rail is safer and more secure therefore ensuring the safe transport of cargo to and from the port.
iv. Saving customer costs – customers also derive enormous benefit from off-dock terminals as they reduce the amount of time and money that would otherwise have spent travelling all the way to the Port to clear or forward cargo.

Cargo handling includes stuffing/ de- stuffing the same into/ from containers to cargo sheds/ trucks, placement/ removal of cargo into/ from a warehouse, shifting of cargo within the terminal, loading/ unloading of cargo on/ from road vehicles with or without mechanical equipment, using computer- automated operation system to maximize terminal productivity and vessel stowage planning and also to increase quality of service.

3.7 Economic Justification for the Establishment Off-Dock Terminals

Afenikhe (2004) highlighted the economic benefits of off dock terminal and bonded warehouses are enormous on the society and national development. This can be aptly demonstrated by the fact that warehouses are needed to handle the flow of goods (Import and Export) and to promote domestic and international trade and business cooperation. Hence, the socioeconomic benefits of off dock terminal, container freight stations and bonded warehouses cannot be overemphasized. Moreover, the advantages far outweigh the disadvantages. The relevance of these maritime infrastructure cuts across a board spectrum of national development indicators and their establishment is justified not only for socioeconomic considerations but also for social as well as political reasons.

For instance, these national infrastructure have indeed increased job opportunities for the teeming Nigeria population and also opened up new areas of opportunity for maritime trade, marketing and domestic manufacturing, especially where trade are located. They have also led to the establishment of certain cottage industries; and this has a multiplier effect on the socioeconomic wellbeing of the people and the economic viability of the nation, especially with regard to maritime productivity and accessibility. They have also led to large-scale urbanization of the places of location of operations and increased revenue to government, mostly at the local government level.

Over the years the traffic through the Nigeria Ports are increasing along with the economic development of the country. It is frequently observed that a queue of arriving ships is formed and sometimes ships have to wait for a longer time before berthing. This can be attributed firstly, to the mobility of the existing port facilities to match the ever increasing global trade and secondly, some obnoxious government policies and regulations. This incessant congestion in our ports has resulted in diversion of ships meant for Nigeria Ports to other neighboring country ports. In the reforms and concessioning of 2006, Tin Can Island Port was concessional to four different private organizations to manage.

Maduka (2004) defined Port Congestion as massive un-cleared Cargo in the Port, resulting in delay of ships in the seaport. According to him, this occurs when ships spend longer time at berth than usual before being worked on or before berth. Onwumere (2008) refers to port congestion as a situation where in a port; ships on arrival spend more time waiting to berth. In this context, more ships will queue at the channels and the outside bar waiting to get space at the terminal for berthage. According to him, this waiting time is calculated using the service time of vessels which is one of the ways of measuring port efficiency. In his view, this is a situation where cargoes coming into the port are more than the storage facilities can handle.

3.8 The Incidence of Port Congestion in Nigeria

Port Congestion is a global phenomenon not limited to only Nigeria. In 2005 global map of congestion around the world the entire Africa was there, the West Coast of Africa including Nigeria was there, the Eastern part of Africa, around Kenya, Southern Africa even the West Coast of the United States of America was there. This was as a result of so many factors (Zhang et al, 2008).

Maduaka, (2004) highlighted the factors responsible for port congestion in Nigeria and suggested ways to control congestion at the Ports. According to him, there are advantages and disadvantages in port congestion. He stated that Port congestion brought about realization for better planning, port expansion and development. He cited loss of revenue, unemployment and bad image to the country as its major disadvantages. Classic transport magazine, a logistic, shipping and multi-modal transport stated that Port Congestion is inimical to the economic growth (volume 1 of 2009).

According to the maritime journal (2011), port congestion has a negative implication on the economic resources, wastage of time and space as well as increase in the cost of operations and cost to the society.

Tom (2009) posited that Nigeria should be warned about reoccurrence of congestion in our port. According to him in spite of the various waivers conceded by the government the dwell time of consignment in the port is gradually jacking up against expected time. He cited the use of Manual Clearing Process as one of the major factors responsible for the reoccurrence of the looming congestion.

The long queue of cargo at the nation's sea ports has been identified as the cause of port congestions in the country. Investigations round the ports in Lagos axis show that importers and agents normally take up to 21 days before clearing their containers from the port. They attributed this problem to two major factors such as high dwell time of cargo including poor clearing process, nonchalant attitude and low storage charges by the terminal operators. They said because of low charges, many importers and agents were no longer worried when their containers stayed long at the terminals as they were always ready to pay the charges.

Commenting on the issue, Frank Aliakor, in maritime journal (2011), suggested that the terminal operators should discourage this act by imposing heavy sanctions on operators who left their containers for too long at the terminals. He also listed poor transport infrastructure such as narrow exit gates and multiple agencies at the port as other hiccups causing long dwell time of cargo.According to him, some port users deliberately use port terminals as warehouse pending the time they would complete their long and unending clearing process with Customs.

Guttenberg Port, Sweden grants free storage charge for the first three days of container arrival and places storage charges of $15 for another three days; while Port Elizabeth, New Jersey in America has the first four days of arrival as storage free and charges $136 per day. Sydney Port, Australia, charges $80 per day after an initial rent free period of three days.

Alfred Egbu (2006), further noted that importers and agents abandoned their containers at the ports for a long period because they start sourcing for funds to clear their goods at the port when their cargoes had arrived. He noted that cumbersome clearing process at the port coupled with alleged extortion by government agencies made it impossible for importers to clear their goods early from the ports.

He, however, advised the Federal Government to investigate reasons why some importers and agents prefer to leave goods at the terminals which ordinarily are supposed to be transit facilities. "I can tell you without any fear that the agents and port users have discovered that it is cheaper for them to use the terminals. I want use this opportunity to call on the Nigerian Ports Authority (NPA) to transfer every long staying containers Customs bonded facilities for auction" he added.

IV. RESEARCH METHODOLOGY

4.1 Design

For the purpose of this research work a descriptive research design is used. The type of descriptive research design employed in this study is survey design because it involves the study of small or large population by selecting and studying a sample chosen from the population. The researchers systematically study the area which is Sifax Off-Dock Nigeria Limited in Lagos in order to generalize the findings for the remaining off dock terminals in Nigeria.

4.2 Sampling and Sample Techniques

For statistical airiness, convenience and proper analysis, a sample size of 100 respondents was selected and used for the study.

In order to cater for those selected respondents who may for one reason or the other fail to complete their questionnaires, a total of 150 respondents were chosen

and questionnaires sent to them. 100 completed and returned their questionnaires in which they were used for this study.

Sampling technique employed is simple random sampling to select sample of 100 respondents. This was employed in order to give respondent in the target population equal chance of being selected.

4.3 Statistical Treatment of the Data

Data for the study were presented using frequency distribution tables, the simple percentages were used to analyze them.

Also inferential statistical data used to test the hypothesis is chi- square x^2 test which enables the decision maker accept or reject the already stated hypothesis.

It is mathematically express thus below

Formula for Simple Percentage

F/N* 100

Where; F= Total frequency of responses

N= Total number of responses

Formula for chi- square X^2 test

F_E

$$X^2 = \frac{F_0 - F_e}{}$$

Where; X^2= chi- square, F_0= observed frequency, F_e= Expected frequency,

H_o= Null hypothesis, H_1= Alternative hypothesis

The degree of freedom (df) = (C-1) (R-1)

To find F_e= $\frac{\text{total of column x total of row}}{\text{Grand total}}$

The decision rules there that:

- When the calculated chi- square X^2 is greater than the table value we reject the null hypothesis and accept the alternative.
- When the calculated chi- square X^2 is less than the table value we accept the null hypothesis.

4.4 Tests for Hypothesis

This section is devoted to the testing of hypothesis stated above so as to validate the guesses.

The hypothesis tested at 0.05 alfa significant level.In order to arrive at decision in the hypothesis, the researcher considered 5 %(0.05) level of significance i.e. (95% confidence) at degree of freedom 4.

4.4.1 Summary of Responses obtained from Questionnaire

Responses	Cargo volume handled	Causes of port inefficiency	Government and other authorities contribution	Cost and time effectiveness of off dock terminals	GRAND TOTAL
YES	53	53	37	34	177
NO	47	47	63	66	223
TOTAL	100	100	100	100	400

(Source: This study 2018)

Fe (YES) = $\frac{100x177}{400}$ =44.25

Fe (NO) = $\frac{100x\ 223}{400}$ = 55.75

Hypothesis I

H_0 There is no significant relationship of cargo volume handled by private off dock terminal over the last five years.

H_i There is significant relationship of cargo volume handled by private off dock terminal over the last five years.

Table 4.4.2

RESPONSES	F_o	F_e	$F_o - F_e$	$(F_o - F_e)^2$	$\frac{(F_o - F_e)^2}{F_e}$
YES	53	44.25	8.75	76.56	1.73
NO	47	55.75	-8.75	76.56	1.37
TOTAL	100	100	0	153.12	3.10

(Source: This study 2018)

The table above reveals that the calculated X^2 value is 3.10; the significance level is 5% (0.05) with a degree of freedom of 3, the value of X^2 as traced on the chi-square table is 7.82. As such the table value is greater than the calculated value; we accept the null hypothesis which states that there is no significant relationship of cargo volume handled by private off dock terminal over the last five years and reject the alternative hypothesis that there is significant relationship of cargo volume handled by private off dock terminal over the last five years.

Hypothesis II

H_0 The causes of port inefficiency have no significance towards cargo handling freight forwarders.

H_i The causes of port inefficiency have significance towards cargo handling of freight forwarders.

Table 4.4.3

RESPONSES	F_o	F_e	$F_o - F_e$	$(F_o - F_e)^2$	$\frac{(F_o - F_e)^2}{F_e}$
YES	53	44.25	8.75	76.56	1.73
NO	47	55.75	-8.75	76.56	1.37
TOTAL	100	100	0	153.12	3.10

(Source: This study 2015)

Decisional Rule

The table above reveals that the calculated X^2 value is 3.10; the significance level is 5% (0.05) with a degree of freedom of 3, the value of X^2 as traced on the chi-square table is 7.82. As such the table value is greater than the calculated value, we accept the null hypothesis which states that, the causes of port inefficiency have no significance towards cargo handling freight forwarders and reject the alternative hypothesis which state that, the causes of port inefficiency have significance towards cargo handling of freight forwarders.

Hypothesis III

H_0 The level and extent of assistance received by off dock terminals from government and other authorities has no impact on port efficiency.

H_i The level and extent of assistance received by off dock terminals from government and ot.er authorities has impact on port efficiency.

Table 4.4.4

RESPONSES	F_o	F_e	$F_o - F_e$	$(F_o - F_e)^2$	$\frac{(F_o - F_e)^2}{F_e}$
YES	37	55.5	-18.5	342.25	6.17
NO	63	44.5	18.5	342.25	7.69
TOTAL	100	100	0	684.5	13.86

(Source: This study 2018)

Decision Rule

The table above reveals that the calculated X^2 value is 13.86; the significance level is 5% (0.05) with a degree of freedom of 3, the value of X^2 as traced on the chi-square table is 7.82. As such the table value is lesser than the calculated value so we reject the null hypothesis and accept the alternative hypothesis that the level and extent of assistance received by off dock terminals from government and other authorities has impact on port efficiency

Hypothesis IV

H_0 There is no significant difference in cost-effectiveness and time of handling cargo at private off-dock terminals compared to the main port.

H_i There is significant difference in cost-effectiveness and turnaround time of handling cargo at private off- dock terminals compared to the main port.

Table 4.4.5

RESPONSES	F_o	F_e	$F_o - F_e$	$(F_o - F_e)^2$	$\frac{(F_o - F_e)^2}{F_e}$
YES	34	55.5	-21.5	462.25	8.33
NO	66	44.5	21.5	462.25	10.39
TOTAL	100	100	0	924.75	18.72

(Source: this study 2015)

Decisional Rule

The table above reveals that the calculated X^2 value is 18.72; the significance level is 5% (0.05) with a degree of freedom of 3, the value of X^2 as traced on the chi-square table is 7.82. As such the table value is lesser than the calculated value so we reject the null hypothesis and accept the alternative hypothesis that there is significant difference in cost-effectiveness and turnaround time of handling cargo at private off- dock terminals compared to the main port.

4.5 Discussion of Findings

From the hypotheses tested and the results obtained it is believed that the relationship of cargo volume handled by private off dock terminal has no significance over the last five years and as such it has not enhanced port efficiency over the last five years. And also it was found out that the causes of port inefficiency have no significance towards cargo handling freight forwarders. That mismanagement of port and lack of infrastructure do not affect the handling of cargo of freight forwarders at the port. Also the findings and hypothesis tested indicate that the level and extent of assistance received by off dock terminals from government and other authorities have impact on port efficiency. That if adequate assistance like finance and equipment are granted to private off dock terminals, it will aid port efficiency by handling large volume for freight forwarders thereby port efficiency is enhanced. Lastly from the findings there is significant difference in cost effectiveness and turnaround time of cargo handling at private off-dock terminals compared to the main ports, because most shippers or freight forwarder agreed to the fact that it is not cheaper for them to clear their cargoes at off dock terminals and equally it takes more days to clear containers at private off-dock terminals compared to the main ports in Nigeria.

V. SUMMARY AND CONCLUSIONS

5.1 Conclusion

Based on the involvement of the respondents in key sectors in shipping in Lagos, the researcher concluded that the data collected and analyzed in the study from within the scope is worthwhile for the research and that the generalizations made from there are realistically applicable.

On the primary objectives of this study which entails on, to examine the extent to which private off-dock terminals haves contributed to the efficiency of ports in Nigeria with respect to cargo clearance and forwarding, the following conclusion were drawn by the researcher.

If government makes adequate funds available, provides infrastructure like railway to private off dock from port, customs and port authority's activities are checkmated and also reduction of cost of clearance and time of cargo at private off dock time, it is believed that private off dock terminal will contribute more to enhancement of port efficiency in Nigeria.

5.2 Recommendations

The primary objectives of the study was spell out in chapter one, the researcher made useful recommendations for the resolution of those problems identified in the study which reflect strictly the summary of the study and conclusions drawn for the study.

Sequel to this study, the following recommendations were made by the researcher:

1. Government should sponsor seminars and workshops, which contribute to orientate and sensitize Nigerians on the needs to facilitate the proper shipping development through off dock terminals in Nigeria.
2. Government should ensure railway connectivity from port to off dock terminals.
3. Policies should be enacted, which will ensure efficient operations of private off dock terminal in Nigeria.

5.3 Suggestions for Further Research

The following suggestions for further research were made by the researcher:

1. The contribution of off dock terminal to freight forwarders and shippers
2. The impact of railway connectivity to ease off dock terminal operations.
3. The need for effective operation of off dock terminal
4. A critical appraisal of the strategies for improving offdock terminals performance/ productivity in Nigeria environment.
5. The impact of private off dock terminal in Nigeria transportation system.

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